

# ***USMC Expeditionary Energy***



## ***Joint Committee On Tactical Shelters (JOCOTAS)***

***03 Nov 11***

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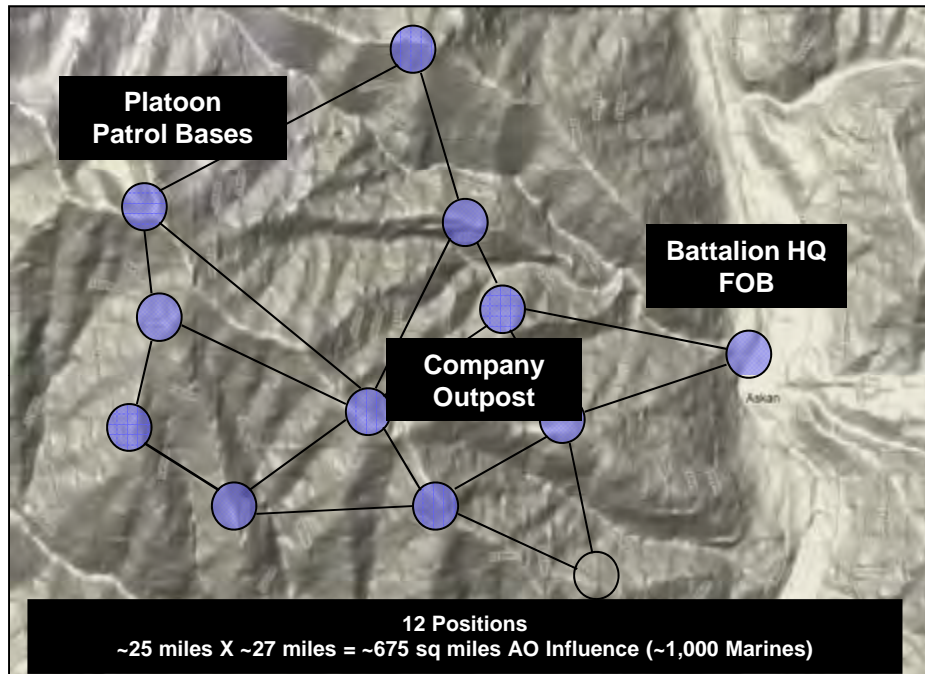
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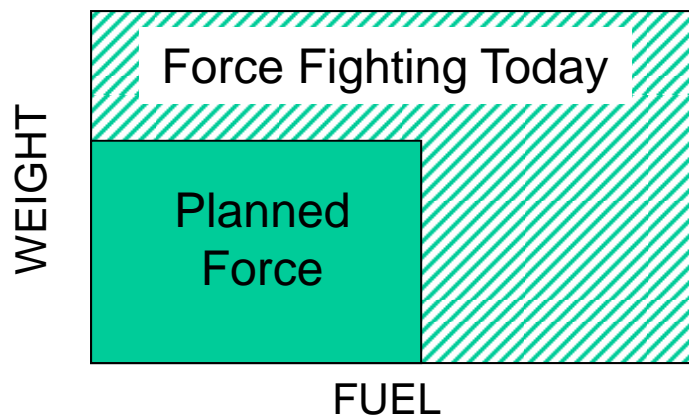


# ***Distributed Operations***

## ***“Enabled By Technology Advances”***



- 250% Increase in Radios
- 300% Increase in IT/Computers
- 200% Increase in # of Vehicles
- 75% Increase in Vehicle WGT
- 30% Decrease in MPG
  - MTRV – 4.3 MPG
  - HMMWV – 8.0 MPG
  - MRAP – 4.0 MPG



### **Increased Risk and Dependence**

**24 Mar 10 – 30 Jun 10**  
**299 Fuel/Water Convoys (98 Days)**  
**6 Marines WIA hauling Fuel/Water**  
**1 Marine WIA per 50 Fuel/Water Convoys**

***We can't afford to continue business as usual.***



# Lighten the Load, Don't Give up Lethality



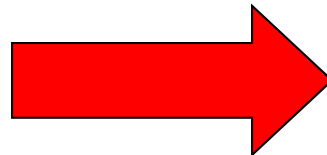
## Batteries Alone:

380% Weight Increase

2,400% Cost Increase



Vietnam



AN / PRC - 148 or 152  
Unique Batteries

AN / PRC-153  
Unique Battery



Quiet Pro Headset  
Unique Battery



Squad Digital Camera  
Unique Battery



AN / PRC-117F  
BA-5590 / BA-5390 / BB-2590 Batteries



Rugged Laptop  
Unique Battery

Today

Unclassified

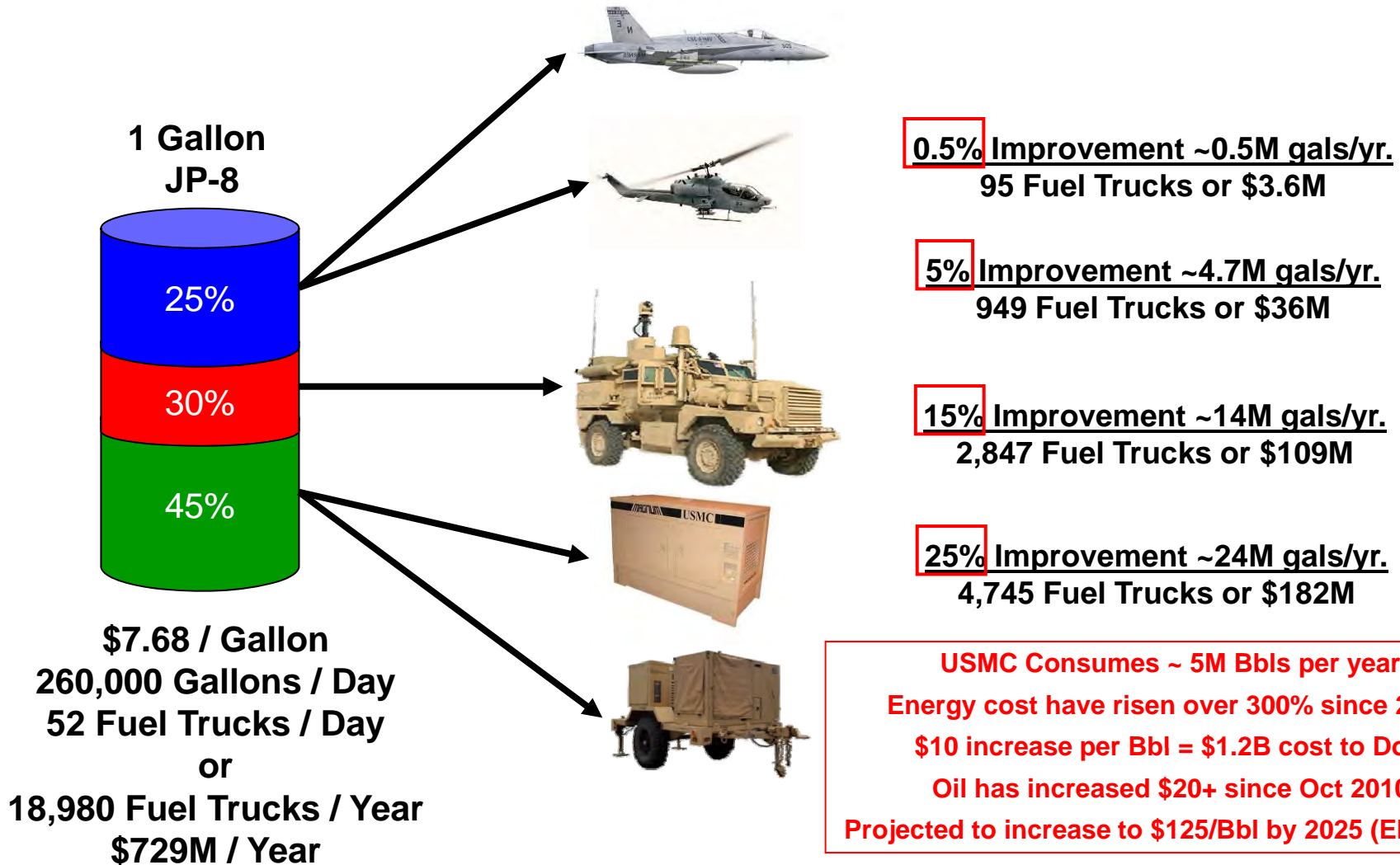




# Today's Deployed MAGTF



## Small Improvements in Energy Efficiency...Big Impact!



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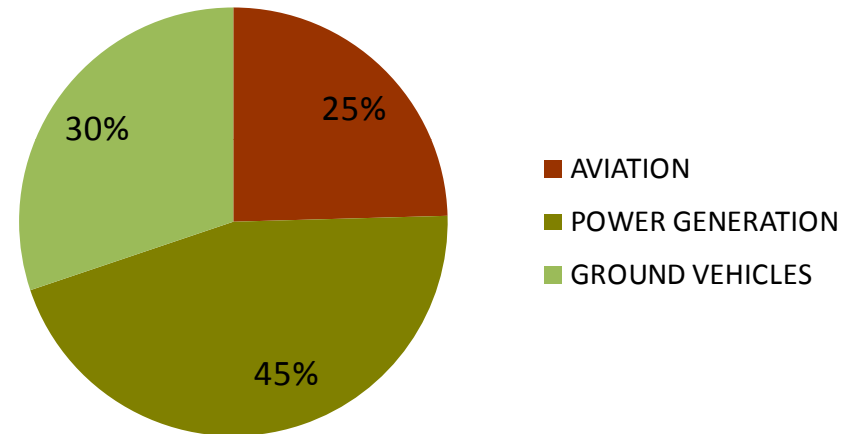
# Expeditionary Energy Goals

## “A Starting Point”



- 25% Doctrine, Training, Organization, and Leadership = Behavior Change  
“Expeditionary Ethos”
- 10-15% Increased Efficiency of Ground Vehicles and Equipment
- 5-10% Renewable / Alternative Energy
- 10% Increased Efficiency in Aviation

~50% Reduction by 2025



Starting Baseline

OEF 2010

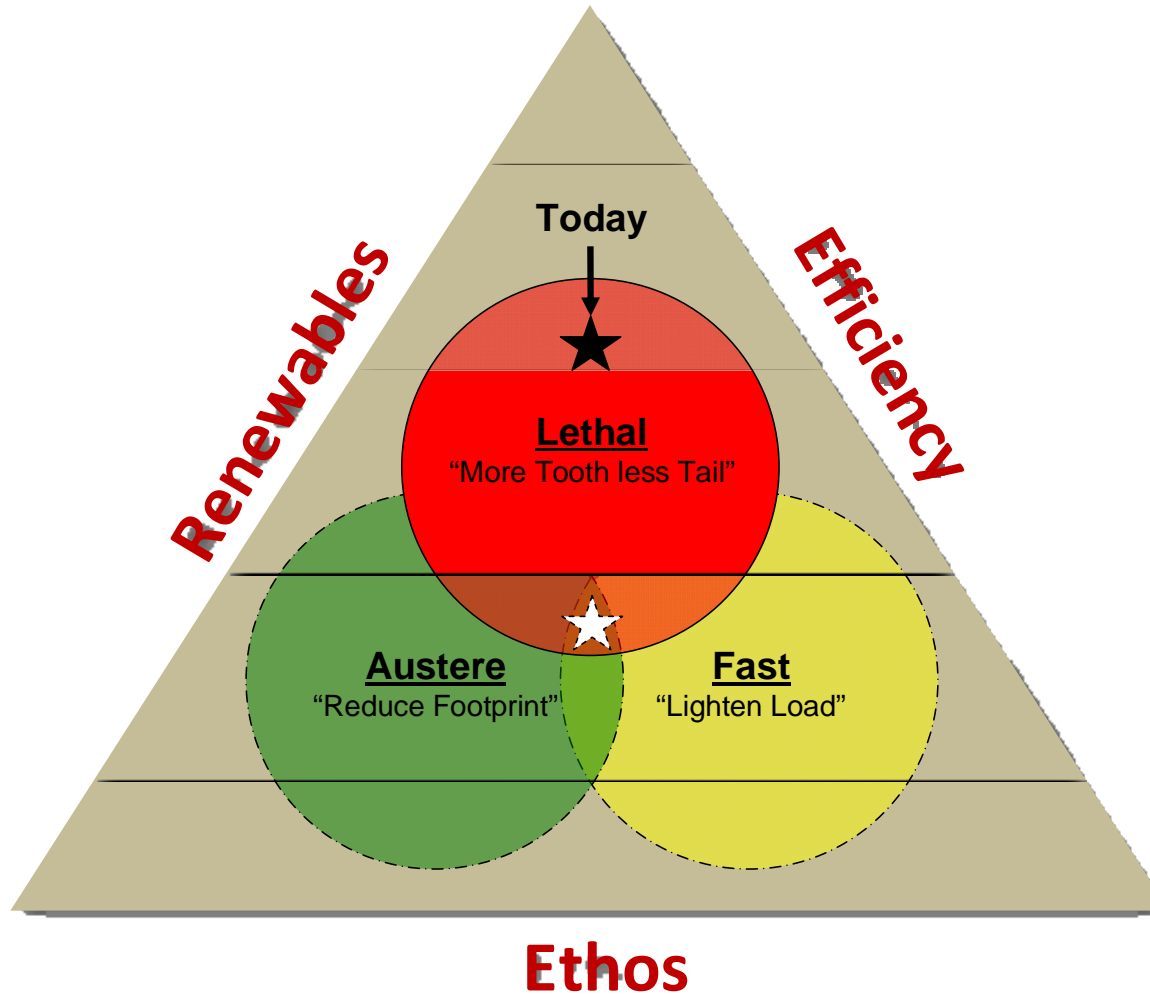
(Will be adjusted as we gain greater insights into actual use across the MAGTF)

**Creating a more Capable MAGTF, Today and Tomorrow**

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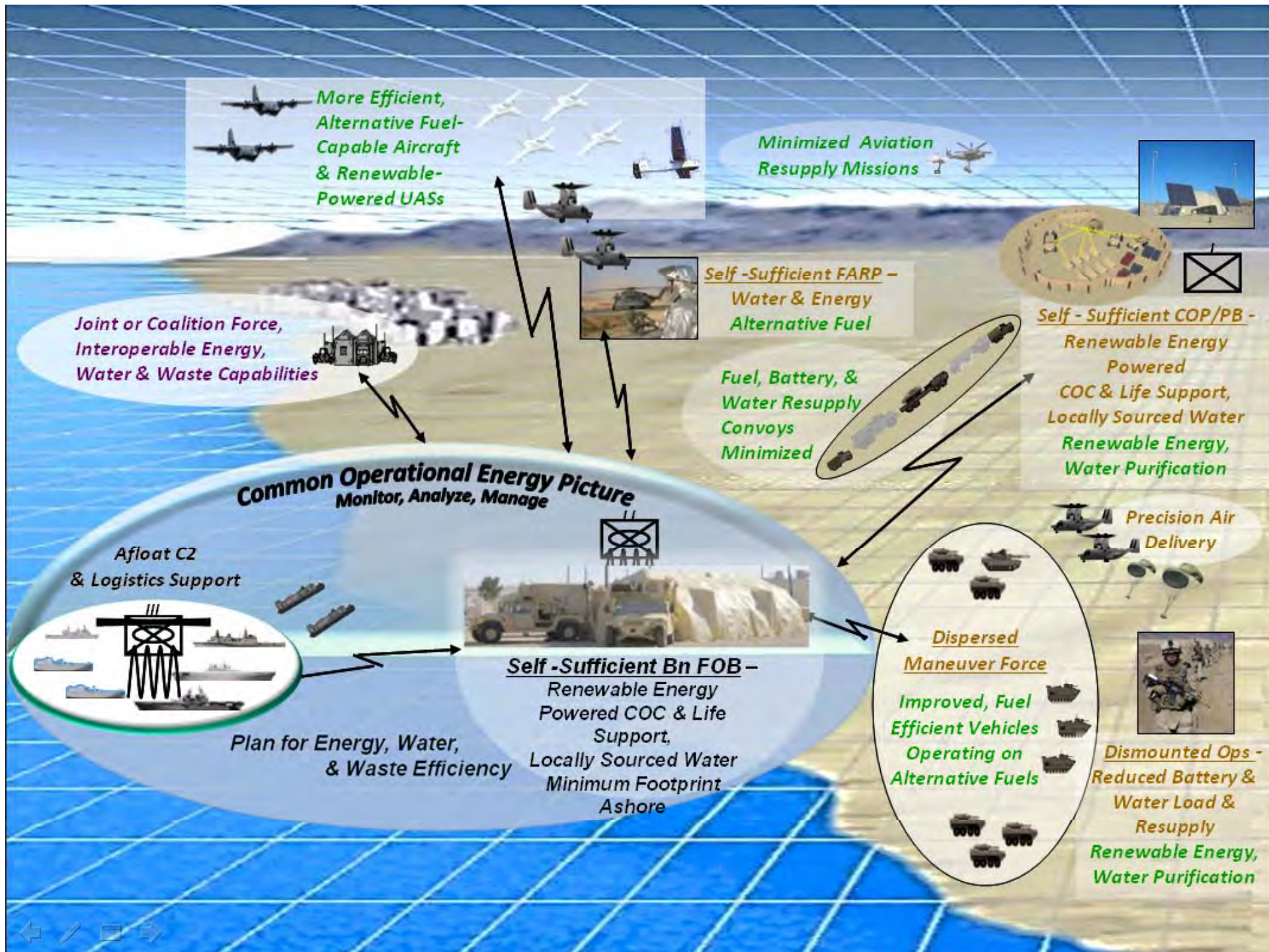


# Increasing Effectiveness Reducing Risk



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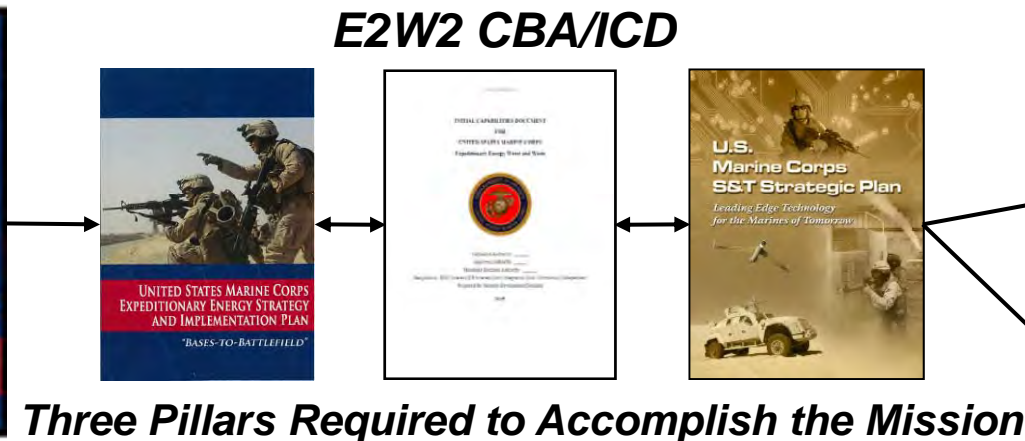


# Strategic Framework to Create a More Capable MAGTF



## Mission

*By 2025 we will deploy Marine Expeditionary Forces that can maneuver from the sea and sustain C4I and life support systems in place; the only liquid fuel needed will be for mobility systems which will be more energy efficient than systems are today.*

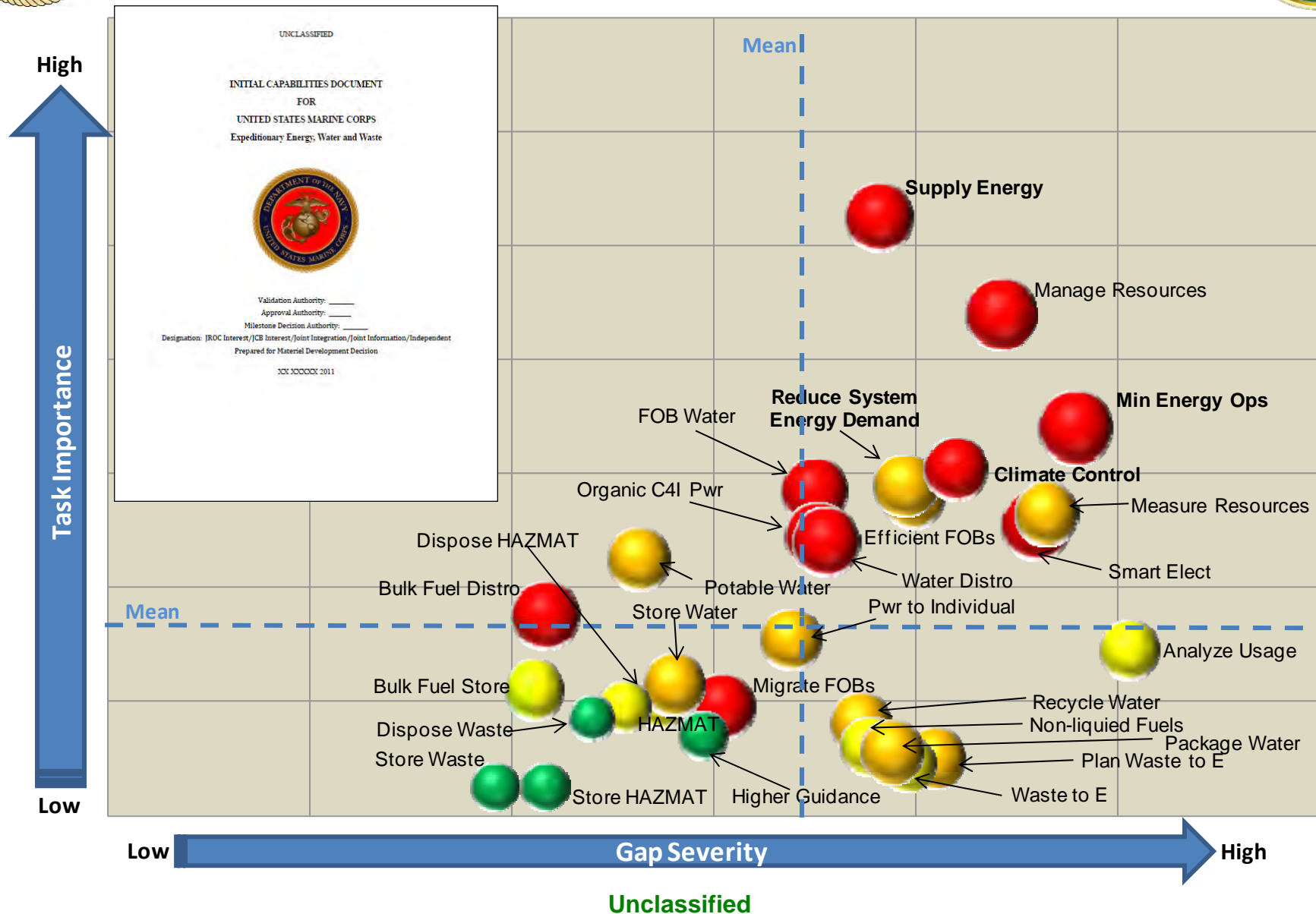


**Energy Strategy and Supporting Requirements Documents Written in Parallel to Achieve CMC's Priority; ...to "Implement New Capabilities..."**

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# "Expeditionary Energy, Water, and Waste ICD Gaps"



# *ExFOB Update*

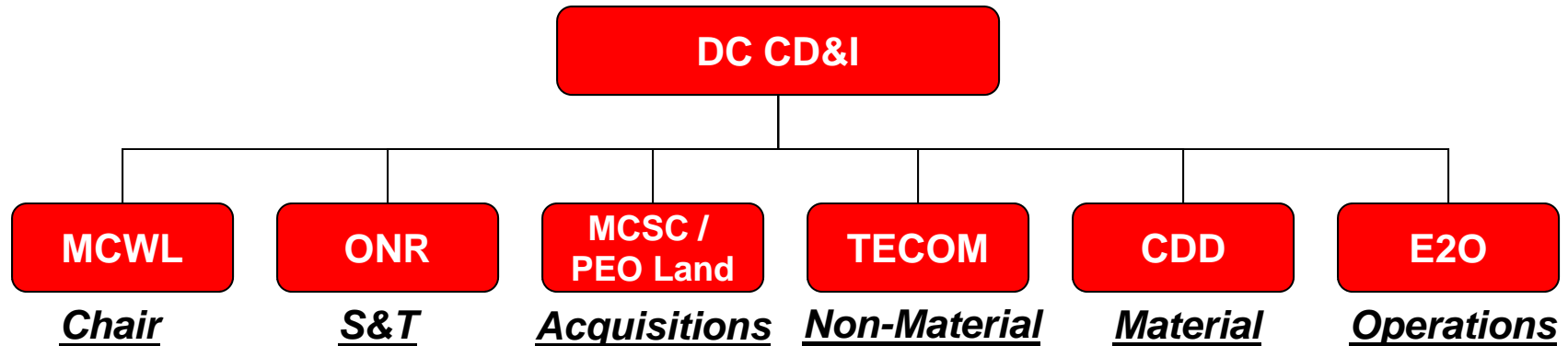


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# ExFOB Team



- ExFOB executed Aug (West Coast)
  - Additional ExFOB 30 Apr – 4 May (East Coast)
- Operational Planning Team – Weekly
- Executive Board Meets Quarterly
- MROC Brief Annually
- E<sup>2</sup>O administrative oversight, scheduling, and budgeting

***Informs Requirements / Mitigates Investment Risks / Builds Confidence in New Technology***



# ExFOB To Date



**Dec-09**

**RFI  
95  
Technologies**

**Mar-10**

**ExFOB  
16  
Technologies  
Quantico, VA**

**Apr-Jul 10**

**Eval/Train  
8 (-2)  
Technologies**

**Oct-10**

**Deployed  
6  
Technologies**

**Jul-11**

**Accelerated  
4  
Technologies**

**1st ExFOB**

**Apr-10**

**RFI  
28  
Technologies**

**Aug-11**

**ExFOB  
15  
Technologies  
29 Palms, CA**

**May-Jul 11**

**Eval/Train  
3  
Technologies**

**Aug-11**

**Deployed  
3  
Technologies**

**TBD**

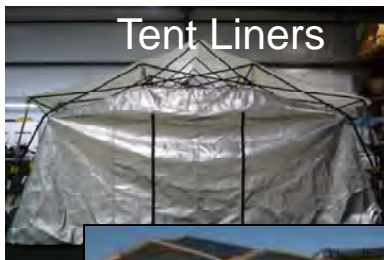
**Accelerated  
TBD  
Technologies**

**2nd ExFOB**

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# 1<sup>st</sup> ExFOB Deployment Accelerating Technologies to OEF



Tent Liners



LED Lights



SPACES



GREENS

## Cost & Savings:

- Cost \$25M
- Projected Savings
  - Est. \$40.9M / Year
  - Est. 9M lbs / Year
  - Est. 450 MV-22 Sorties
  - Est. 180 Fuel Trucks

## Fielding 10 Sets Each :

- 75 x Shelter Liners for BASE-X 305
- 75 x LED Lights
- 96 x Solar Portable Alternative Communications Energy System (SPACES)
- 20 x Ground Renewable Expeditionary Energy Network System (GREENS)

## Operational Impact:

- Reduced fuel and battery requirements, reduced load
- Improved quality of life with efficient shelters
- Quiet, easy to maintain systems





# 2<sup>nd</sup> ExFOB Deployment PB Boldak



## Hybrid Power System

- **Greater Than 80% Fuel Savings**
- **Break Even Weight approx. 3 Months**
- **Break Even Fuel Cost approx. 1 Year**
- **Concerns : Complexity / Weight**

## Direct Current Air Conditioner

- **Great Than 70% Fuel Savings**
- **Break Even Cost Immediately**
- **Concerns : Durability / Heating**





# ***Non-Material Solutions Update***

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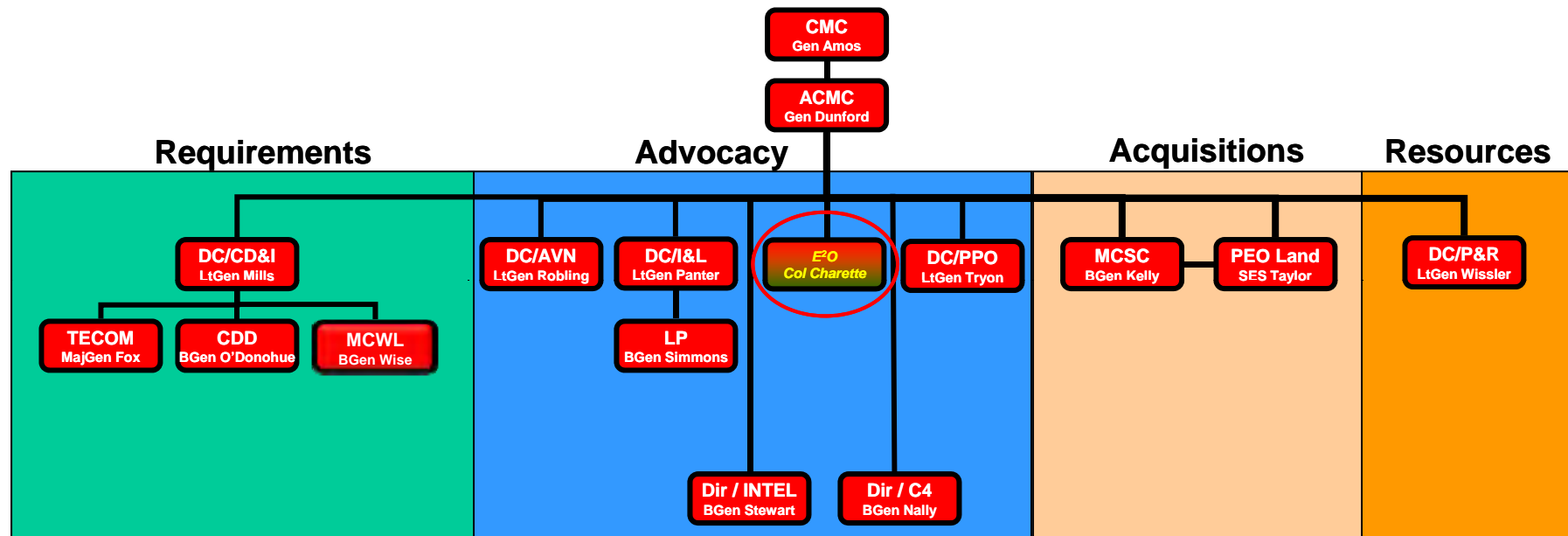
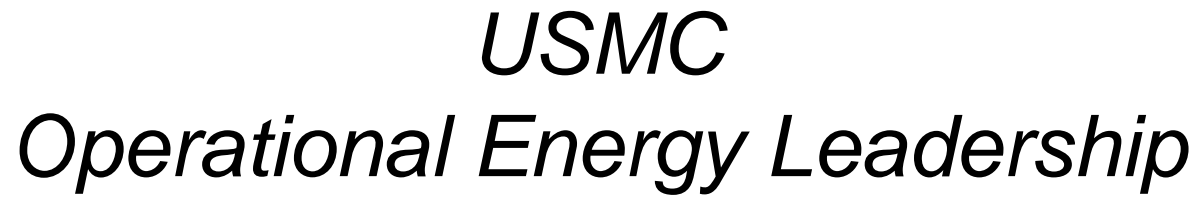


- Common Skills Program “Expeditionary Ethos”
    - Under review at TECOM
  - Camp Commandant Pilot Training Program
    - MCES In-Work
  - Doctrine Review
    - Ongoing
- 
- NPS New Energy Curricula
    - 3 Students









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***Director, Expeditionary Energy Office***

